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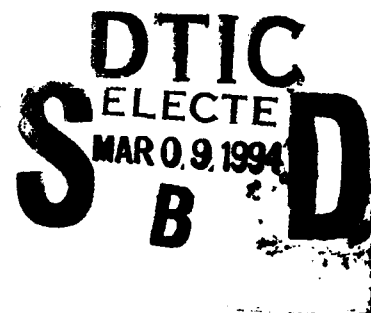
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Training America's Work Force: A Private Sector Base Line and Its Impact on National Security

Captain
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U.S. Coast Guard

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**TRAINING AMERICA'S WORK FORCE:
A PRIVATE SECTOR BASE LINE AND ITS EFFECT ON NATIONAL SECURITY**

Captain Samuel J. Apple, USCG

ABSTRACT

Throughout its history, the United States has remained economically strong and secure through a productive work force powering its industries. Low skill jobs provided high wages and supported a high standard of living. In recent decades, however, foreign economic competitors have overtaken the U.S. through better training, higher skilled work forces. Our competitors work forces are more productive and able to shift to new production requiring different skills because of their broad, continuous training systems. U.S. industries have also moved low skill jobs to low wage countries in an attempt to remain competitive.

In order to regain the economic edge and protect our national security the U.S. work place must change and U.S. workers must match their foreign counterparts in skills and flexibility. The U.S. training system, however, is ill prepared to take on the challenge of retraining the work force. U.S. attitudes towards lifetime training also need to change. This paper examines the private sector of the training industry and recommends changes to the training system to enable it to meet the needs of 21st century U.S. workers.

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INTRODUCTION

A well-trained, highly skilled work force and our national security are inseparable. A trained work force has a major effect on both the economic and military elements of our national power. A well-trained work force is the engine that powers business productivity and global economic competitiveness. A well-trained work force is also flexible and adjusts easily to change in the peacetime market place and when mobilizing to support defense requirements.

Multinational corporations, seeking the best and cheapest work force, are moving low skill jobs to other countries. While wages are important in these decisions, worker quality also counts. A highly skilled, trained work force could easily shift to other jobs and product lines.

Corporations are restructuring their work place to remain competitive in the global economy. The old mass production work place used low knowledge, single skill workers supervised by middle managers. The new work place, in both the manufacturing and service sectors, requires workers with high technical knowledge, quick response, and flexibility in job skills. New work place organizations are replacing middle managers with front line production workers who are assuming company leadership, decision-making, and technology responsibilities.

The defense industry downsizing is eliminating the surge capacity from our industrial base. A highly skilled, responsive work force is a building block for quick industrial response to future crisis situations that require military build-up. A skilled work force is also a

manpower pool that the military can draw on during mobilization.

The U.S. training and education system is not responding to the demands of our changing world. It still produces college graduate middle managers and keeps front line production workers at narrow, low skill levels by ignoring their job preparation. Only 55% of U.S. production workers receive any job preparation training and only 35% ever receive job upgrade training.¹ Our national security is driven by human capital. Training is one of the primary systems that preserves and increases our human capital.² If our training system situation is not changed soon, U.S. competitiveness in the global economy and the economic opportunities of all U.S. citizens will suffer. Our national security will be threatened. The challenge is to identify the system's shortcomings and to design and implement changes that support the needs of our changing situation.

Before making changes, however, the existing U.S. training system must be put into perspective. This paper examines and provides an economic base line of the private sector of the training industry. This sector includes private community and junior colleges, private training institutions, apprenticeship programs and employer-provided training programs. (This paper does not address private community and junior colleges since existing economic data does not differentiate between public and private colleges.) The structure, conduct, and performance of each industry segment is analyzed. This paper also compares U.S. training practices with those of our major economic competitors, Germany and Japan. Finally, the paper presents some policy options and recommendations to improve the U.S. work force training system.

ECONOMIC BASE LINE

Our training system is not really a system at all. Its structure is fragmented and its programs are uncoordinated and lack standards. The U.S. training industry includes:

- public-supported and private junior colleges and community colleges
- private training institutions
- apprenticeship programs
- formal and informal employer-provided programs

In the standard classification of industrial sectors, training is a service industry. Its aim is to provide workers with job skills and knowledge required by business and industry. In the U.S., basic job skill training starts where high school education ends for those entering the work force. In addition, the industry provides three kinds of training for those already in the work force: (1) upgrading existing skills; (2) facilitating adaptation of new technologies or new problems at work; and (3) retraining of workers whose skills have become obsolete.³

The Standard Industrial Classification (SIC) codes used to collect data for the training industry are:

- 8222 - Junior colleges and technical institutes,
- 8243 - Data processing schools (includes schools offering training in data processing, computer programming, and in computer and peripheral equipment operation, maintenance, and repair),
- 8244 - Business and secretarial schools (includes schools offering courses in business machine operation, office procedures, and secretarial and stenographic skills),

- 8249 - Vocational schools (includes institutions offering specialized, but not academic training, such as apprentice training, aviation schools, art schools, and practical nursing schools. Note that beautician and barber schools are included in the classification for that industry, 7231 and 7241, respectively.)
- 829X - Schools and educational services (includes schools that offer specialized training such as music, drama, and language schools, student exchange programs, civil service and other short term examination preparatory schools, and vocational counselling. Note that educational testing, dance schools, and sports instruction schools are included in the classification for that particular industry, 8748, 7911 and 7999, respectively.)⁴

Analysis of the industry is difficult. There is no single entity that monitors or coordinates the entire training industry. For example, industry data collection is split between the Department of Education for junior and community colleges and technical training institutes, the Department of Commerce (Census Bureau) for other vocational training schools, and the Department of Labor for apprenticeship programs. The data collected does not reflect a clear distinction between public-supported and private institutions. The federal government collects no data on employer-provided training. Numerous trade and industry associations monitor their respective segments of private sector. However, they depend on voluntary membership and do not cover all institutions. Only one trade magazine monitors employer-provided training using an annual survey. There is some overlap in data collection since individuals, as well as employers providing training to their employees, use private schools. None of the data collectors make this distinction.

PRIVATE TRAINING INSTITUTIONS

Structure

There were 5,581 private training institutions reported in 1992.⁵ This is a slight increase from the 5,333 institutions reported in 1989.⁶ Networks of corporation-owned schools (e.g., ITT, McGraw-Hill and DeVry) as well as single, individually-owned and operated institutions make up this sector.

An estimated 1.6 million full time equivalent (FTE) students enroll each year.⁷ This equates to almost 3.7 million students obtaining basic job skill training, and 1.6 million students upgrading their skills.⁸ These institutions operate in a free market from both the provider and user point of view.

Capital investment costs vary depending on the complexity of the training and the length of course offered. For instance, the cost to establish and maintain an aircraft engine maintenance school, with engines and tools for hands-on maintenance training, is much higher than that of a school for security guards.

Conduct

School costs, reflected by tuition, are competitively priced. The average annual tuition is \$4500. Actual course costs vary according to course length, occupation complexity, and capital investment costs. Tuition represents the full cost of training since private schools do not receive direct government subsidies.⁹ All private schools, however, are very dependent on direct federal tuition aid to students. Of the \$6.8 billion spent for private institution training in 1991¹⁰, federal tuition subsidies paid \$4.9 billion (about 72%)¹¹ directly to 85 % of

the students.¹² Even with this large amount of federal student assistance, taxpayers save approximately \$2000 per student FTE year compared to the student loans and school subsidies paid to publicly supported community colleges.¹³

Private schools train 50% of the high school graduates who do not go on to college, as well as a large percentage of college and high school drop outs. Over 70% of the students are women, reflecting a large percentage of training offered in occupations that are stereotyped as women's jobs, e.g., cosmetology, secretarial and health service areas. Approximately 40% of the students are minorities.¹⁴

These schools offer training in almost 200 occupational fields (figure 1), including 14 of the top 20 fastest growing occupations (figure 2). The schools award certificates of completion as well as degrees. A variety of programs are offered that range from a six-week training certificate for a truck driver, to a two year associate degree in business, allied health services, etc.¹⁵ The majority of programs offered, however, are one year or less in duration.

Both federal and state governments regulate the private training institutions. The Department of Education sets guidelines for accreditation and recognizes accrediting agencies. The accrediting agencies are private, voluntary associations of member institutions. The accrediting agencies have no regulatory or enforcement power. Their only influence is to grant or withdraw accreditation. Since schools that are accredited by agencies sanctioned by the Department of Education are eligible to participate in federal student aid programs, withdrawal of accreditation has a tremendous economic impact.¹⁶

CAREER TRAINING OFFERED AT PRIVATE SCHOOLS

Accounting	Elementary Education	Nurse's Aide
Accounting/Bookkeeping/Finance	Emergency Medical Technician	Nursing
Actor	English as a Second Language	Office Administration
Administrative Assistant	Engraver	Office Machine Repair
Air Conditioning/Heating/Ventilation	Environmental Health	Ophthalmic Dispensing and Optical Science
Animal Trainer	Equine Studies	Optometric Assistant
Appliance Repairer	Fashion Designer	Offset Printing
Architectural Engineering Technician	Fashion Illustrator	Painter
Artist, Commercial	Fashion Merchandiser	Paperhanger
Artist, Fine	Fine Arts	Paralegal/Legal Assistant
Auto Body Repairer	Floral Design	Paralegal/Office Assistant
Auto Diesel Technician	Food Service Management	Pet Groomer
Automotive Technician	Food Service Specialist	Pharmacy Assistant/Pharmacy Clerk
Aviation Maintenance Technician	Gemologist	Pharmacy Technician
Aviation Management	General Administration	Phlebotomy Technician
Bank Teller	General Business	Photographer
Banking Services and Management	General Business Education	Physical Therapy Aide
Barber/Hairstylist	General Clerical and Clerk Typist	Pilot, Commercial
Bartender	Graphic Design	Pilot, Private
Blueprint Reader	General Studies/Liberal Arts	Plumber
Boat Design	Geriatric Assistant	Podiatry Assistant
Brickmason	Golf Course Operations & Management	Practical Nursing
Broadcaster	Gunsmith	Printer
Broadcasting Technician	Heavy Equipment Operator	Private Security/Investigations/Corrections
Building Maintenance Technician	Home Health Care Aide	Programmer Analyst
Business Administration	Horsemanship Specialist	Psychiatric Assistant
Business Teacher/Education	Horology	Public Administration
Cabinetmaker	Horticulturist	Radio/Television Repair
Cardiac Technician	Hospital/Health Care Management	Real Estate Agent
Carpenter	Hotel-Motel Manager	Receptionist
Cashier/Grocery Checker	Hotel-Restaurant Management	Recording Specialist
Child Care	Human Services	Recreation and Leisure Management
Chiropractic Assistant	Illustrator	Refrigeration Technician
Civil Engineering Technician	Import/Export Specialist	Residential Appraising
Computer-Aided Drafting	Industrial Design Technology	Respiratory Therapist
Computer-Based Accounting	Instrumentation Specialist	Retailer
Computer Graphics	Interior Designer	Robotics
Computerized Business Administration	Jewelry Designer	Seaman/Marine Technician
Computer Programmer	Land Surveying	Secretary/Transcriptionist
Computer Sales	Legal Secretary	Security Alarm Technician
Computer Service Technician	Locksmith	Sewing Machine Repair
Computer Operator	Loss Prevention/Security Officer	Shoe Repair
Construction Technologist	Machine Tool Technology	Shorthand Reporter
Cosmetologist	Machinist	Skin Care Specialist
Court Reporting	Maintenance	Stenographer
Culinary Arts Specialist	Makeup Artist	Surgical Technician
Data Processor	Management	Surveyor
Data Entry Specialist	Marketing	Tailor
Dealer	Massage Therapist	Taxidermist
Dental Assistant	Mechanical Engineering Technician	Theater Production Specialist
Dental Laboratory Technician	Medical Assistant	Tool and Die Designer
Dental Office Assistant	Medical Administrative Assistant	Transportation Management
Denturist	Medical/Dental Receptionist	Travel and Tourism
Desktop Publishing	Medical Lab Technician	Truck Driver
Diamond Cutter	Medical Office Assistant	Upholsterer
Diesel Mechanic	Medical Office Manager	Veterinary Administrative Assistant
Dietetic Technician	Medical Secretary	Veterinary Assistant
Diver	Modeling	Vocational Nurse
Drafter	Merchandising	Watchmaker and Repairer
Dressmaker and Designer	Motion Pictures/Television/Video Production	Welder
EKG Technician	Motorcycle Mechanic	Word Processing
Electrician	Musical Instrument Maker/Repairer	X-ray Technician
Electrologist	Nanny	
Electronics Technician		

FIGURE 1

(From Career College Association News Letter, November, 1992)

**THE TWENTY FASTEST-GROWING
OCCUPATIONS, 1988-2000**

(Ranked by greatest expected percentage increase, not necessarily
largest expected job growth)

<u>Occupation</u>	Number of Jobs		Percentage Increase in Employment (1988-2000)
	<u>1988</u>	<u>2000 (projected)</u>	
*Paralegals	83,000	145,000	75.3
*Medical Assistants	149,000	253,000	70.0
*Home Health Aides	236,000	397,000	67.9
*Radiologic Technologists and Technicians	132,000	218,000	66.0
*Data Processing Equipment Repairers	71,000	115,000	61.2
*Medical Record Technicians	47,000	75,000	59.9
*Medical Secretaries	207,000	327,000	58.0
*Physical Therapists	68,000	107,000	57.0
*Surgical Technologists	35,000	55,000	56.4
Operations Research Analysts	55,000	85,000	54.8
Securities & Financial Services Sales Workers	200,000	309,000	54.8
*Travel Agents	142,000	219,000	54.1
Computer Systems Analysts	403,000	617,000	53.3
*Physical and Corrective Therapy Assistants	39,000	60,000	52.5
Social Welfare Service Aides	91,000	138,000	51.5
Occupational Therapists	33,000	48,000	48.8
*Computer Programmers	519,000	769,000	48.1
Human Service Workers	118,000	171,000	44.9
*Respiratory Therapists	56,000	79,000	41.3
*Correction Officers and Jailers	186,000	262,000	40.8

*Occupational preparation is offered at private career colleges and schools.

Source: U.S. Department of Labor, Bureau of Labor Statistics, 1990.

FIGURE 2

The major private school accrediting agencies recognized by the Department of Education are:

- Accrediting Commission for Independent Colleges and Schools
- Accrediting Commission for Trade and Technical Schools
- Accrediting Bureau of Health Education Schools
- Accrediting Council for Continuing Education and Training
- Committee on Allied Health Education and Accreditation
- National Accreditation Commission on Cosmetology Arts and Sciences
- National Home Study Council
- Board of Review for Baccalaureate and Higher Degree, Associate Degree, Diploma, and Practical Nursing Programs

Other accrediting organizations, including some regional commissions that accredit colleges and universities, also accredit some private training schools. There is also a private organization of accrediting agencies, the Council on Postsecondary Accreditation (COPA), that exists to coordinate accreditation and also provides national leadership on accreditation matters.¹⁷

The accreditation process attempts to guarantee that a quality product is delivered and to provide national standardization. The process is quite involved and may require up to 2 years for initial qualification, plus periodic recertification visits by the accrediting agency. Generally, schools cannot apply for accreditation until they have operated successfully for two years. They file an application with the accrediting agency, pay a fee, and conduct a

self-evaluation. The self-evaluation usually lasts several months and is based on agency guidelines. After the self-evaluation is completed, an agency team visits the school to confirm the results of the self-evaluation. The team either grants full, or provisional accreditation, or denies accreditation based on the results of the visit.¹⁸

State governments set requirements for mandatory licensing. Requirements vary from state to state.

Private schools are very customer oriented, both to individuals and corporations. They work closely with businesses to determine and meet general industry requirements and readily tailor training for specific needs. They also set flexible class times to satisfy the schedules of individuals who are either already full or part time employees, as well as for those preparing to enter the work force.

Performance

Private training institutions provide quick, efficient training and successful placement in the job market. The graduation rate for private schools is 61 %. This compares very favorably to that of 4-year colleges (58%) or community colleges (43 %). This equates to approximately 650,000 to 750,000 graduates annually.¹⁹ These schools also have a higher graduation rate for minorities than 4-year or community colleges.

The job placement rate for graduates is 81 % within the first six months following graduation. They typically find employment faster and earn more than contemporaries who have either been in the job market or who have only completed compulsory education.²⁰

Industry trends include:

(1) Schools are shifting from task specific programs to broader-based, degree granting programs to meet customer and job market demands,

(2) Numerous students have defaulted on federal loans. There has also been bad publicity about several schools that made big profits from federal loans to minorities without providing a quality product. As a result, increased federal loan program oversight is causing the industry to, unfortunately, move away from low income students.

(3) The total number of private institutions hasn't varied greatly over the past several years. In these tight economic times, however, multi-school organizations, such as ITT, McGraw-Hill or DeVry, are buying up single, individually-owned schools. There is no data yet on how this will impact the industry.

One can expect that if U.S. procedures for training the work force do not change, the industry will remain stable. However, if the Clinton Administration can successfully reshape the U.S. training system, the industry will realize its very large growth potential.

FORMAL APPRENTICESHIP PROGRAMS

Structure

Approximately 300,000 registered apprentices use recognized apprenticeship programs to become journey workers in over 800 occupations²¹ in 415 trades.²² This is a small number of trainees compared to the approximately 30 million total skilled trade employees in the U.S. Because of the small numbers of providers and users, one can consider the formal apprenticeship program as an oligopoly. Sixty per cent of all apprentices are in the

construction and metal trades²³. Within that trade group, the carpentry, electrical and pipe trades absorb 40% of all apprentices.²⁴ There is no capital investment cost information available.

Conduct

Apprenticeship is the ideal job training concept: it combines academic and applied learning with applied evaluation of progress. Training averages 1 to 6 years, varying by skill level and trade. Technical school instruction and junior/community college courses may also be used as part of the program.

Employees are paid while being trained, and pay increases with an increase in skill level.²⁵ The sponsor of the apprenticeship program pays the cost of the programs. Sponsors can be individual employers or employer associations. Unions sometimes participate in cost-sharing with employers²⁶.

Unions control the limited openings to apprenticeship programs. Applicants must first meet entry requirements for age, education, aptitude, and physical condition. Requirements vary from trade to trade, and from occupation to occupation, but most include aptitude tests, a physical examination and proof of high school grades and a diploma. Most applicants are also interviewed by a council representing the union and the employer sponsoring the program. If successful, the applicant is placed on a register to wait for training openings.²⁷

The number of available openings varies with economic conditions and the willingness of employers to train skilled craft workers.²⁸ Apprentices do not start training unless jobs openings are forecast to be available at the end of the training program.

Women and minority participation in these programs has never been high. In 1990, women accounted for only 7% and minorities for 22.5% of all apprentices. Both groups are concentrated in the lower wage earning occupations.²⁹

Apprenticeship programs require the cooperation of government, trade unions, and employers. Unions and employers determine their own training requirements and administer the programs under the federal guidelines. If the program meets the standards, either the Bureau of Apprenticeship and Training (BAT) in the Department of Labor, or state agencies approved by the Department of Labor, registers the program. Graduates of approved programs are awarded certificates of completion as skilled craft workers and journey workers. Currently 27 states, the District of Columbia, Puerto Rico and the Virgin Islands have apprenticeship agencies. The BAT administers programs in the remaining states.³⁰ The BAT and state agencies are responsible for:

- promoting apprenticeship to potential sponsors
- providing technical assistance to existing or new sponsors in establishing apprenticeship programs
- registering programs that meet standards
- helping sponsors establish affirmative action plans
- enforcing compliance with equal employment opportunity regulations.³¹

The framework of basic program standards is governed by the Department of Labor, as specified in the following:

- (1) National Apprenticeship (Fitzgerald) Act of 1937

- (2) Smith-Hughes Vocational Act (1917)
- (3) George-Barden Vocational Act (1946)
- (4) Vocational Education Act of 1963
- (5) Comprehensive Employment and Training Act of 1972³²
- (6) Job Training Partnership Act of 1982³³

Performance

Enrollment in formal apprenticeship programs (150,000 per year) has been relatively constant over the past decade. Compared to the U.S. work force size, however, enrollment has declined and now represents only 0.3% of the total work force.³⁴ The U.S. trains fewer members of the work force through apprenticeships than any other industrial nation. The approximately 50,000 graduates per year normally continue to work for the same firm that sponsored the apprentice program.

The total number of openings in this program is also shrinking. Over the last decade some trades have lost 30-45% of their apprenticeships.³⁵ Two factors are principally responsible for this decline: (1) the recessionary economy of the late 1980's, and (2) the 30% reduction (1990 dollars) in federal funding of apprenticeship promotion and administration by BAT in the last decade.³⁶

In order to increase the use of formal apprenticeships, the Department of Labor is sponsoring the Apprenticeship 2000 program. Apprenticeship 2000 shifts emphasis for apprenticeships from only hard-to-serve population groups (at risk youth and dislocated workers) to that of training and retraining all workers based on international marketplace demands. It consists

of a two-tier strategy for raising skill levels of the U.S. work force by: (1) strengthening the current apprenticeship system, and (2) encouraging expansion of structured work based training which incorporates successful features of apprenticeship. The program proposes administrative and regulatory changes to streamline and make the existing system more user friendly. Governments (national, state and local) will provide incentives for all firms sponsoring training to expand the program of structured work based training. This program also tries to shift the paradigm that everyone needs a college education. It supports the idea that people who do not attend college can have a meaningful, successful life and career via noncollege work based learning alternatives. Apprenticeship 2000 is a unique partnership of business and labor, a concept that holds great promise to meet work force training future needs.³⁷

EMPLOYER-PROVIDED TRAINING

Structure

All employers provide some level of training to their employees. Employers with over 10,000 employees (100-200 firms) provides 90% of the training.³⁸ This represents 0.5% of all employers.³⁹

About 1/3 of the total work force receives training annually. In 1992, this equated to almost 41 million people.⁴⁰ Capital investment costs for 1992 were reported as \$4.1 billion. Only larger companies with in-house training departments experienced these costs.

Conduct

Employers spent an estimated \$200 billion for training in 1992. Of that total, \$45 billion,

4% more than 1991, paid for 1.3 billion hours of formal training. The rest was used for informal, on-the-job training. These estimates of training investments include hidden costs, such as employee salaries⁴¹ (figure 3). Firms with more than 10,000 employees spend as much as 2% of the total payroll on training. Smaller firms spend much less (figure 4).

Little training is provided to those less than 25 or greater than 44 years old. Nonsupervisor training is limited: white collar workers get more training than blue collar workers, and better educated workers get the most training. Only 1/3 of noncollege workers receive training, which affects approximately 8% of the production workers.⁴² Executives get most of their training from outside sources. They are more likely to be flown to conference centers for training. Production workers are normally trained by company staff, remaining close to the job site⁴³ (figure 5). Transportation, communications and utilities industries spend the most for employee training.

Employers provided over 17.6 million courses in 1992.⁴⁴ New employee orientation is the most common type of training provided. New equipment operations, computer applications, and problem solving training have all seen increases in 1992. Several new categories have also been introduced: diversity and sexual harassment lead this group⁴⁵ (figure 6).

Who provides the training, either in-house or outside source, depends on the size of the company and the type of training required. About 60% of entry job preparation and 25% of job upgrade training come from outside sources⁴⁶ (figure 7).

During lean budget times, training budgets, generally, have been reduced no worse than the

DOLLARS BUDGETED FOR FORMAL TRAINING (U.S. firms with 100 or more employees)

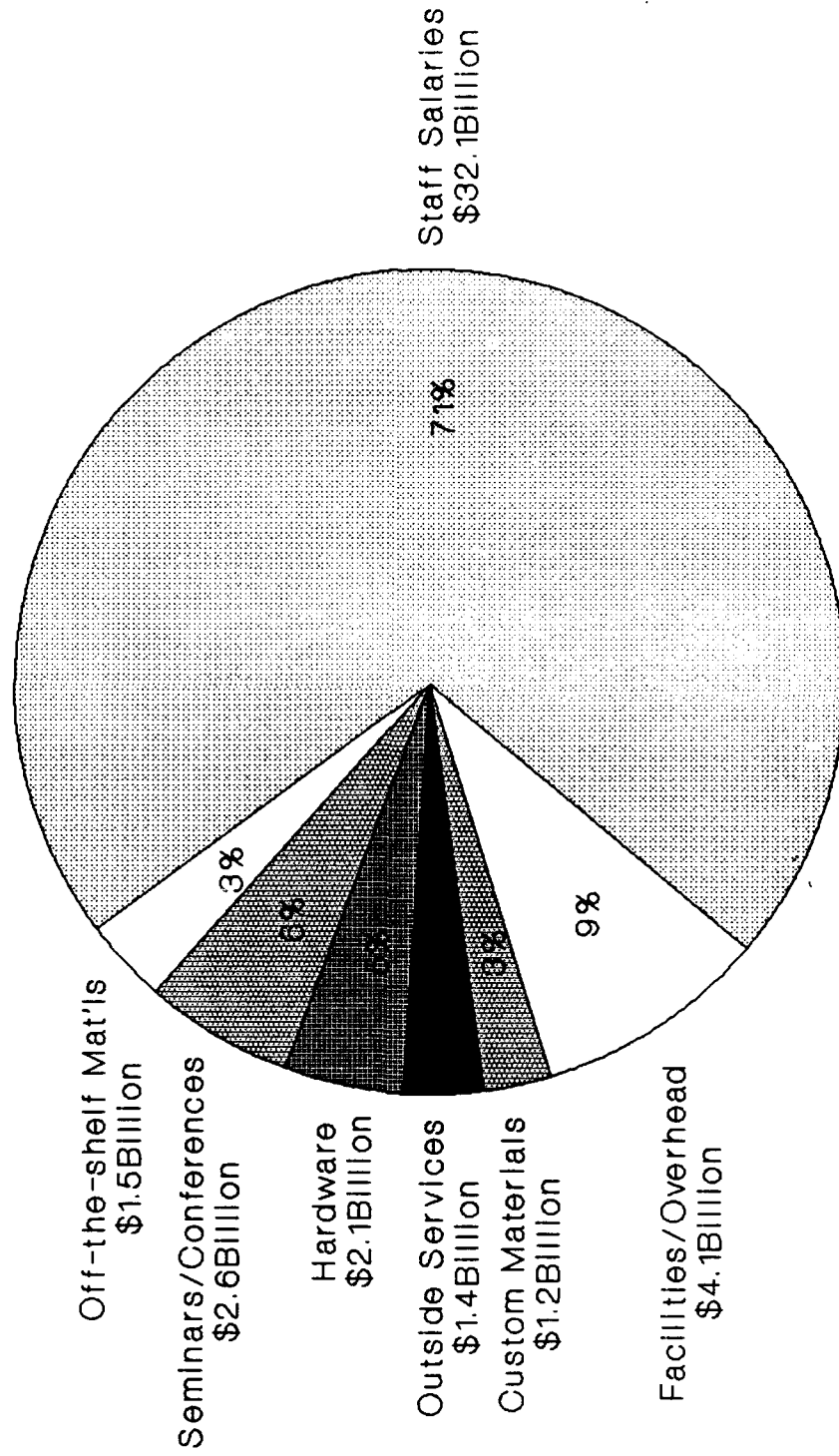


FIGURE 3
(From TRAINING Magazine, October, 1992)

1992 TRAINING BUDGETS

Projected Totals (in millions)

Organization Size (Number of Employees)	Seminars/ Conferences	Hardware	Outside Services	Custom Materials	Off-the Shelf Materials	Total Outside Expenditures	Facilities/ Overhead	Trainer Salaries	Total Budget
100-499	\$782	\$546	\$440	\$287	\$511	\$2,565	\$1,600	\$9,058	\$13,223
500-999	225	130	125	90	100	670	158	2,109	2,937
1,000-2,499	388	141	153	106	136	924	212	1,902	3,038
2,500-9,999	341	352	179	246	274	1,393	674	3,882	5,949
10,000 or More	892	922	469	520	436	3,238	1,474	15,172	19,884
Total	2,628	2,091	1,365	1,248	1,458	8,790	4,118	32,123	45,031

Averages Per Organization By Size (in dollars)

Organization Size (Number of Employees)	Seminars/ Conferences	Hardware	Outside Services	Custom Materials	Off-the Shelf Materials	Total Outside Expenditures	Facilities/ Overhead	Trainer Salaries	Total Budget
100-499	\$ 7,448	\$ 5,200	\$ 4,187	\$ 2,729	\$ 4,871	\$ 24,436	\$ 15,238	\$ 86,277	\$ 125,951
500-999	17,653	10,193	9,794	7,070	7,896	52,606	12,405	165,740	230,751
1,000-2,499	43,124	15,636	17,001	11,735	15,089	102,586	23,566	211,174	337,326
2,500-9,999	75,387	77,855	39,654	54,295	60,630	307,822	148,973	857,719	1,314,513
10,000 or More	606,474	627,541	318,797	353,552	296,660	2,203,024	1,002,609	10,321,039	13,526,673

Averages Per Organization By Industry (in dollars)

Industry	Seminars/ Conferences	Hardware	Outside Services	Custom Materials	Off-the Shelf Materials	Total Outside Expenditures	Facilities/ Overhead	Trainer Salaries	Total Budget
Manufacturing	\$23,686	\$22,196	\$13,619	\$12,820	\$17,492	\$89,813	\$85,365	\$221,398	\$396,576
Transportation/ Communications/Utilities	24,350	16,143	12,827	12,582	17,822	83,724	28,915	887,229	989,867
Wholesale/Retail Trade	18,292	10,683	9,682	10,208	6,059	54,925	14,622	137,573	207,119
Finance/Insurance/Banking	16,755	9,815	8,006	6,848	14,136	55,560	19,850	107,181	182,590
Business Services	16,693	19,029	7,916	9,298	8,204	61,139	20,916	278,416	360,481
Health Services	14,602	10,088	6,548	4,795	7,246	43,278	13,433	210,544	267,255
Educational Services	14,228	15,280	9,846	4,704	11,886	55,944	7,631	104,995	168,570
Public Administration	20,082	25,418	6,051	6,747	8,839	67,137	7,039	131,588	205,764

FIGURE 4 (From Training Magazine, October, 1992)

WHO GETS THE TRAINING

Job Category	Organizations Providing Training (%)	Average Number of Individuals Trained	Projected Number of Individuals Trained (millions)	Average Number of Hours Delivered	Projected Total Hours of Training Delivered (millions)
Salespeople	44	53	3.6	39	142.2
Customer-Service People	57	81	7.1	36	256.4
Professionals	65	66	6.3	42	24.7
First-Line Supervisors	74	32	3.7	33	122.2
Middle Managers	73	25	2.9	33	94.7
Executives	70	7	0.8	31	23.8
Senior Managers	65	13	1.3	31	38.5
Production Workers	38	186	10.9	29	312.0
Administrative Employees	72	35	4.0	20	77.9
Total			40.9		1,292.3

FIGURE 5
(From Training Magazine, October, 1992)

SPECIFIC TYPES OF TRAINING

Types of Training	% Providing	In-House Only (%)	Only (%)	Both (%)
New Employees Orientation	91	83	0.2	7
Performance Appraisals	79	52	5	21
New Equipment Operation	76	35	6	35
Leadership	75	14	13	48
Hiring/Selection Process	74	33	10	32
Interpersonal Skills	73	18	10	46
Word Processing	71	22	16	33
Listening Skills	71	23	11	37
Time Management	71	22	16	32
Personal Computer Applications	69	20	10	38
Team Building	68	18	9	42
Delegation Skills	67	20	12	34
Problem Solving	66	21	9	36
Goal Setting	66	19	9	39
Product Knowledge	66	44	3	20
Decision Making	66	19	12	35
Train-The-Trainer	66	17	20	29
Safety	65	27	4	34
Sexual Harassment	64	31	8	25
Motivation	64	18	12	34
Conducting Meetings	62	26	11	26
Quality Improvement	62	16	6	39
Stress Management	61	17	16	28
Computer Programming	59	8	21	30
Public Speaking/Presentation	59	19	19	20
Managing Change	58	15	11	31
Writing Skills	57	13	19	25
Data Processing	57	17	12	28
MIS	56	14	15	28
Planning	55	20	7	27
Finance	53	16	14	23
Strategic Planning	51	14	12	25
Substance Abuse	50	13	17	20
Negotiating Skills	49	12	14	24
Smoking Cessation	47	15	18	14
Marketing	45	11	13	22
Ethics	43	18	8	16
Purchasing	43	19	10	13
Creativity	42	16	9	17
Diversity	40	11	9	20
Outplacement/Retirement Planning	39	19	9	11
Reading Skills	30	8	13	9
Foreign Language	21	4	14	3
Other (Topics Not Listed)	5	3	0.1	2

FIGURE 6
(From Training Magazine, October, 1992)

SOURCES OF TRAINING

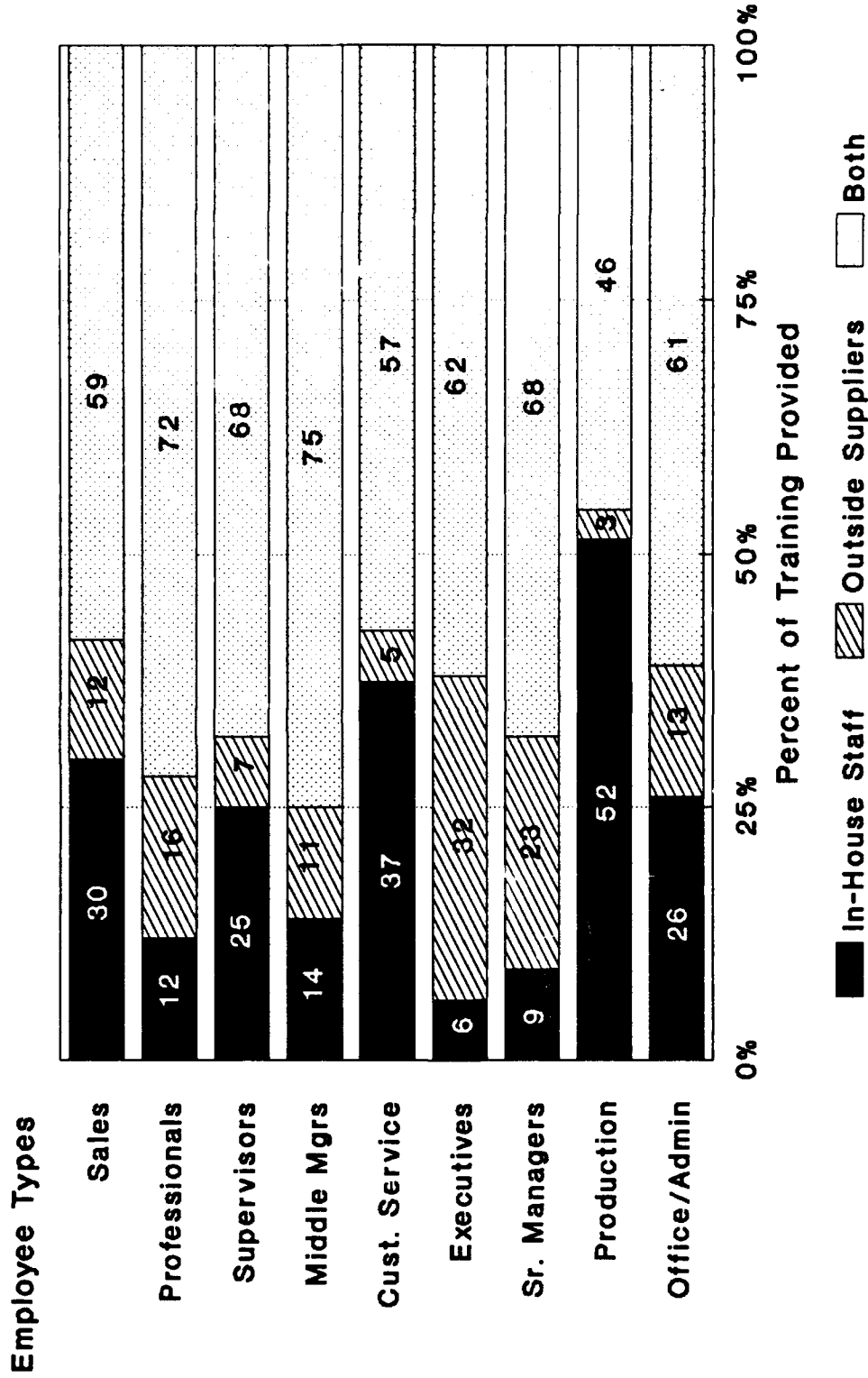


Figure 7
(From TRAINING Magazine, October 1992)

other portions of the organizations' budgets. In spite of the 1991 recession, only 59% of businesses reduced training budgets. Of that, 68% cut training the same as other functions; 11% cut less; 22% cut more. Organizations with greater than 500 employees usually cut training more than those with 100-499 employees, but not by a bigger margin. The average size of the cut was 29%.⁴⁷

Performance

There is no data collected to evaluate graduation rates and job skill improvement. There are, however, some interesting general trends:

(1) Larger businesses are starting to view training their work force as an investment required to be competitive. They are providing training as a means to create flexible, productive workers. Smaller firms, however, are still reluctant to invest in training. They fear the mobility of the work force will prevent them from seeing a return on their investment.

(2) An alarming, but necessary, training trend is noted in the area of basic skills. The number of employers who are providing remedial education, e.g. listening skills, goal setting, etc., grew about 10% in 1992. Employer-provided basic education courses - the 3R's - are also increasing. The percent of employers providing these courses increased to 19% in 1992 from 11% in 1989. Forty-two per cent of organizations with greater than 10,000 employees sponsor basic education courses. For example, General Motors spent \$30 million for basic education in the last 2 years; Chrysler invested \$5 million to raise 3000-4000 employees to 8th grade education level in reading, writing and math. It is important to note that these are not English as a second language people. Sixty-two per cent of the people

in basic education courses already have a U.S. high school diploma.⁴⁸ (3) More companies (57% of all firms) are also investing in training the customer. This trend is due mainly to increases in product complexities and company efforts to minimize flaws and waste: one third of all costly customer service problems are caused by not knowing how to use the product correctly.⁴⁹

(4) Training in social issues, such as substance abuse, AIDS awareness, ethics, diversity/sexual harassment, and affirmative action, also shows increasing growth trends in all organizations. In 1992, forty-five per cent of employers provided training in this area; an increase from 32% in 1991.⁵⁰ While training in these areas shows an increasing degree of employer social responsibility, it also reduces training resources available for technical training.

INTERNATIONAL COMPARISONS

GERMANY

Germany provides a well developed system of universal apprenticeships for the noncollege bound following completion of compulsory education at age 16. This system trains over 65% of the work force.⁵¹ There are over 400 occupations available. The German government is deeply involved in training the work force. Both the federal and state governments subsidize a portion of the apprenticeship training costs. The federal government also pays up to half the costs of special training centers that serve small business training needs.⁵² Each apprenticeship is certified by the state governments. Each has a common national curriculum developed by employer associations and agreed to by the relevant employer associations, unions, and government agencies. A certificate of completion in an

approved program is recognized throughout Germany.

German apprenticeships are primarily an on-the-job training program with weekly classroom training. The practical training programs last 2 to 3 1/2 years under specially qualified instructors. Classroom training is conducted in theory, occupational specialty fundamentals and general education by university trained vocational instructors. Large German firms provide these courses at both company training centers and outside institutions. Small German businesses pool their resources and use external centers of industry associations or local Chambers of Commerce.

Each apprentice must pass national level qualifying exams to become a journeyman. Further promotion in the trade requires experience and training beyond apprenticeship, and successful performance on additional exams.⁵³ As a result, German workers are better trained in specialized fields and have a better theoretical base from which to develop and enhance skills. This training base supports the ability of the German work force to produce goods of increasing quality and complexity. The well educated work force is considered a cornerstone of the German economy. In addition, German society values vocational training equally with college education. Production workers are viewed as technicians and are treated with respect.

JAPAN

Japan's training system is as good as Germany's, but it is much more decentralized. The national and local governments, through an excellent compulsory education system, provide entrants to the work force who are well educated and know how to learn. The private

companies organize and pay for 75 % of all employee skill training.⁵⁴

There is no national curriculum sponsored by the government. Each company works out its own program to train and shape the workers through experience and in-house educational programs. By creating their own in-house educational institutions, firms can set their own procedures for training specific job tasks and can orient the employees to the company's corporate culture, job attitudes, and production and market strategies.⁵⁵

Both front line workers and managers receive training in their companies. It is rigorous and essential to promotion: everyone must pass exams to advance to the next level. Because in-company training is continuous and focuses on specific fields and skills relevant to the industry and firm involved, employees accumulate skills throughout their careers.⁵⁶

Japan's private industries provide four major types of employee training: (1) new employee basic training; (2) up-date training to keep employees current; (3) promotion preparation; and (4) redevelopment training for workers with obsolete job skills. The Japanese employee training system is successful because it builds on experiences that involve (1) progression from simple to difficult tasks; (2) linking employee training progress to promotion in the company; and (3) planned rotation of employees among jobs to broaden their experience range. The system also links job training to job availability, rather than training and then trying to find a job for the graduates. Skilled, experienced instructors are available in all industries. The system uses a two step process, however, for technology up-date training. The instructors first train key workers who then become trainers of co-workers. The entire process leads to life long vocational education.⁵⁷

U.S. COMPARISONS

The U.S. has no systematic pre-employment training system for the noncollege bound. Transition from high school education to work is very unstructured and is not guided by prediction of job availability. This disenfranchises approximately 20 million 16-24 year olds when they try to enter the work force.⁵⁸ Our chief economic competitors, Japan and Germany, have created a smooth transition and a direct connection between schools and work. Their students are motivated to learn since school performance counts in their entry into the labor force. In the U.S., there is no corresponding connection.

Our culture does not believe in continuous training and our labor safety net policies do not emphasize retraining if existing individual job skills are obsolete. We also place a premium on college education. We neither value vocational training, nor do we hold production workers in high esteem. Retraining of obsolete skill workers is central to the German and Japanese cultures. Industry in both countries views continuous training as essential to remaining competitive. Both countries hold their front line workers in high esteem.

Foreign firms spend up to 6% of payroll on continuous employee training.⁵⁹ U.S. firms, at most, invest 2% of payroll.

Our labor force skills and the requirements of increasingly complex technologies are no longer compatible. Our labor pool lacks simple basic skills - reading, problem solving, computing and knowing how to learn. Additionally, 30% of the future labor pool is likely to come from the disadvantaged - poor, unemployed, unemployable.⁶⁰ There is, however, a growing body of cross-national empirical evidence that verifies that a better trained and

educated work force contributes to productivity growth⁶¹ and has a positive impact on national security.

RECOMMENDATIONS

How should the U.S proceed to upgrade its training system? Simply importing the German or Japanese systems would probably not work in the U.S. Their systems support their respective national culture and traditions and would not mesh well with ours. However, our strategies can incorporate the successful concepts that they use.

1. Increase federal government leadership role.

- Create and implement a strong education and training strategy as a cornerstone of national economic growth.
- Establish and enforce strong national standards for basic education that are linked to business and industry.
- Foster a national attitude change that emphasizes the well trained production worker as a key to a strong economy, and technical training, as well as college education, as the path to success; start periodic student orientation to industry and businesses in elementary school.

2. Reshape the training system.

- Establish coherent, industry-set national job standards.
- Create an industry-run, government supported training process, geared to national standards and certification, that uses work based training: a mix of formal classroom instruction and structured on-the-job training to create a broad-based, skilled work force.

- Create a streamlined, better organized system to coordinate and monitor training efforts; consolidate system data collection; perform analysis of the system's health.

3. Emphasize continuous lifetime training.

- Develop industry-sponsored career paths for production workers to upper management.
- Change social net emphasis to require retraining, linked to jobs availability predictions.
- Create a network of community colleges and private schools for pre-training and retraining of the work force using federal tuition assistance, linked to jobs availability predictions.

Reshaping the industry to be competitive and responsive in the global economy, and training front line production workers to fulfill their new work place responsibilities cannot happen overnight. It may require years before industry sees returns on its investment. American investors and company executives typically cannot focus past the end of the next quarter. Nearly everyone wants a quick return on their investment. President Clinton, therefore, must first face the challenge of changing American investment habits from short term to long term. He must also build consensus between federal and state governments, various government agencies, labor, industry and the American people that we are approaching a crisis that, if not addressed correctly, will make the U.S. a second rate economic nation and jeopardize our national security. The White House must provide the vision and leadership to mobilize all parties to focus on training and education as a system, carefully coordinating policy formulation and implementation between government agencies, industry, labor, and training and education providers.

I recommend these specific steps:

1. Federal Government

- Create and publicize a vision for training and education with the well educated, trained worker as the cornerstone of a strong economy. Showcase the examples of our foreign economic competitors' successful systems.
- Coordinate, from the White House, the campaign to win grass roots support for the program. Use the town meeting approach to get people involved. The media has already bombarded the public with information about the problems with our system and the advantages of our competitors systems. Public awareness exists; it needs to be mobilized.
- Showcase U.S. companies, like Motorola and Kodak, who have changed their work place structure, invested in their workers' training and their companies' infrastructure, and are now competing successfully in the global economy.
- Create a system of incentives and disincentives to change America's investment habits. Make long term investment by stock holders and corporations, plus investment in developing human capital (training), reshaping the work place, and reinvesting in company infrastructure by corporations economically advantageous. Refocus industry on making profits from productive (maximizing output and productivity) rather than non-productive (but-outs, selling assets, etc.) activities.⁶²

Specifically:

- o Increase the time period for long term capital gains from one year to three or four years.

- o Minimize or eliminate taxes on long term capital gains.
 - o Increase, by a large amount, the tax burden on short term capital gains.
 - o Provide tax incentives for companies who invest in training front line workers, create career paths in their companies, and generally reshape the work place.
 - o Provide tax disincentives to companies who refuse to invest in front line worker training, etc. Use these revenues to establish programs to train workers from these companies who do not provide training.
 - o Provide tax incentives to companies who invest company infrastructure and new technology and disincentives to companies who do not.
 - o Minimize short term investor influence on industry strategy and encourage long term investment by granting stock holder voting rights only to long term (3-4 years) stock owners.⁶³
- Provide specific direction to federal region directors to coordinate and facilitate local training efforts in their regions. The regional directors' goal should be to minimize duplication of effort and increase access to existing federal grants and subsidies.

2. State/Local Governments

- Participate in the formulation of federal guidelines and programs; support the new guidelines and programs.
- Shift school curricula to equally weight the emphasis on college preparatory and work force preparatory courses.

3. Labor

- Participate in/support development and implementation of new initiatives and

guidelines.

- Help establish apprenticeship programs in the work place (outside of normal union influence) in support of new government initiatives.
- Make worker training and education, empowerment, and work place restructuring high priority items in contract negotiations.

4. Industry

- Focus on long term investment, investment in human capital, company infrastructure reinvestment, technology, and making profits from productive activities.
- Participate in/support development and implementation of new initiatives and guidelines.

These recommendations will cause tremendous pain in some segments of U.S. society. The effort to refocus our short term investment habits will create chaos for individuals and large investment funds who play "get rich quick" in the stock market. It will, however, allow corporate managers to once again concentrate on long term growth strategies and not merely appeasing stock holders each quarter. The tax package will, in the near term, decrease government revenues and increase the deficit, if not off-set with spending cuts. Long term, however, the tax base will grow as industry and individuals benefit from increased U.S. competitiveness in the global market. Fostering true cooperation between government, industry and labor will be very difficult. They have been adversaries for too long to quickly learn to trust and work with, rather than against, each other. Their cooperation is essential if the U.S. is to regain and maintain its edge on our economic competitors. If they cooperate to do what benefits the nation, they will find that their constituents will also benefit as much,

if not more, that from the current adversarial relationships.

There are numerous, very comprehensive, federal government and private organization-sponsored studies that recommend new programs and policy initiatives. Many of these are well-researched and propose excellent ideas for systemic change. They have been prepared, however, without any coordination and are either languishing in the bureaucracy without sufficient funding, or being implemented piece meal. They need to be reviewed under the vision of a coordinated program to reshape the training system. Initiatives that contribute to a better training system should be kept. Those that do not should be scrapped. Examples of initiatives that should be retained and implemented include:

- Apprenticeship 2000 (described above)
- Youth Apprenticeship Demonstration project. Sponsored by the Department of Labor, this experimental project targets high school youth that will not attend college and attempts to smooth their transition to the work force through an apprenticeship-like program that begins during junior year.⁶⁴
- Secretary's Commission on Achieving Necessary Skills (SCANS). Also sponsored by the Department of Labor, this project established a high level commission of education, business, labor and state government representatives to determine the common core skills needed to enter the work force. The object is to integrate these skills into existing curricula in junior and senior high school to ease transition into the work force.⁶⁵
- Dictionary of Occupational Titles (DOT). This is another Department of Labor effort to create a data base that identifies, defines and classifies occupations in the economy and the skills they require, in order to promote the effective development and use of the U.S.

- work force.⁶⁶

- "America's Choice: high skills or low wages!", the report of the Commission on the Skills of the American Workforce. This private commission examines the existing U.S. work place and work force, compares them with international competitors, and makes recommendation for sweeping changes to the U.S. educational and training structure.

CONCLUSION

Global economic competition will continue to expand. Our economic competitors have gained equal status with the U.S. by investing in their work forces' training and education. Other nations will not challenge us militarily unless they perceive that our industrial base cannot support our forces. We must make changes now to create a system that will provide our work force with the skills needed to keep our economy productive and competitive, and our industrial base responsive. The proposals for change exist. The Clinton Administration needs to review them, pick the best ones, and begin careful, coordinated implementation. Investing now in reshaping the training system will keep our human capital strong. This will insure that America's status as a global leader, both economically and militarily, remains intact and that our national security and prosperity is preserved and increased.

FOOTNOTES

1. Anthony P. Carnevale, Leila J. Gainer, Janice Villet. Training in America. (San Francisco: Jossey-Bass, 1991), 44.
2. Workforce 2000: Executive Summary. The Hudson Institute, Indianapolis, IN, 1987, 116.
3. Richard Kazis. Education and Training in the United States: Developing the Human Resources We Need for Technological Advance and Competitiveness. (Cambridge: The MIT Press, 1989), 11.
4. Census of Service Industries (1987). U.S. Department of Commerce, Washington, DC, 1989, A-17.
5. Digest of Education Statistics - 1992. U.S. Department of Education, Washington, DC, 1992.
6. Vocational Education in the United States: 1969-1990. U.S. Department of Education, Washington, DC, 1992, 70.
7. A Profile of the National Labor Market and Implications for American Education. The Career Training Foundation, Washington, DC, 1992, 14.
8. Anthony P. Carnevale, Training in America, 8.
9. A Profile of the National Labor Market and Implications for American Education. The Career Training Foundation, Washington, DC, 1992, 25.
10. Ibid., 23.
11. Ibid., 25.
12. America's Choice: High Skills or Low Wages! National Center on Education and the Economy, Rochester, NY, 1990, 52.
13. A Profile of the National Labor Market and Implications for American Education, 26.
14. "News Release", Career College Association, Washington, DC, 1992.
15. Digest of Education Statistics - 1992, 70.

FOOTNOTES

16. John B. Lee and James P. Merisotis. Proprietary Schools: Programs, Policies, Prospects. ASHE-ERIC Higher Education Report 5, George Washington University, Washington, DC, 1990, 67.
17. Ibid., 68.
18. Ibid., 68.
19. A Profile of the National Labor Market and Implications for American Education, 17, 18.
20. Ibid., 20.
21. Apprenticeship Training. Administration, Use, and Equal Opportunity. General Accounting Office, Washington, DC, 1992, 8.
22. Work-Based Training: Training America's Workers. U.S. Department of Labor, 1990, 7.
23. Apprenticeship Training. Administration, Use, and Equal Opportunity, 15.
24. Anthony P. Carnevale, Training in America, 11.
25. Ibid., 11, 12.
26. "Apprenticeship", Occupational Outlook Quarterly, Winter 1991/92, 27.
27. Ibid., 30.
28. Ibid., 30.
29. Apprenticeship Training. Administration, Use, and Equal Opportunity, 4.
30. "Apprenticeship", 27.
31. Apprenticeship Training. Administration, Use, and Equal Opportunity, 9.
32. Ibid., 10, 11.
33. Seymour Lusterman and Leonard Lund. Innovation and Change in Voc-Tech Education. The Conference Board, New York, 1991, 8.

FOOTNOTES

34. Work-Based Training: Training America's Workers, 8.
35. Richard Kazis. Education and Training in the United States; 10,11.
36. Apprenticeship Training. Administration, Use, and Equal Opportunity, 18.
37. Work-Based Training: Training America's Workers, 8.
38. "Industry Report - 1992", Training, October, 1992, 37, 38.
39. America's Choice: High Skills or Low Wages! National Center on Education and the Economy, Rochester, NY, 1990, 49.
40. "Industry Report - 1992", 43.
41. Ibid., 34.
42. Richard Kazis. Education and Training in the United States; 13.
43. "Industry Report - 1992", Training, 45.
44. Ibid., 50.
45. Ibid., 50.
46. Anthony P. Carnevale, Leila J. Gainer, Eric R. Schulz. Training the Technical Work Force. (San Francisco: Jossey-Bass, 1990), 50.
47. "Industry Report - 1992", 32.
48. Ibid., 48, 49.
49. Ibid., 48.
50. Ibid., 50.
51. Marc Fisher. "German Job Training: A Model for America?", The Washington Post. October 18, 1992, A-1.
52. John H. Gibbons. Worker Training: Competing in the New International Economy. Office of Technology Assessment, Washington, DC, 1990, 21.

FOOTNOTES

53. Richard Kazis. Education and Training in the United States:, 14.
54. R. Murray Thomas. International Comparative Education: Practices, Issues and Prospects. (Oxford: Pergammon Press, 1990).
55. Richard Kazis. Education and Training in the United States:, 14.
56. Michael E. Porter. The Competitive Advantage of Nations. (New York: The Free Press, 1990).
57. R. Murray Thomas. International Comparative Education: .
58. Richard Kazis. Education and Training in the United States:, 2.
59. Anthony P. Carnevale. Training the Technical Work Force, 2.
60. America's Choice: High Skills or Low Wages!, 62.
61. Richard Kazis. Education and Training in the United States:, 26.
62. Lester Thurow. Head to Head. (New York: William Morrow & Co., Inc, 1992), 285.
63. Ibid., 287.
64. "What is Youth Apprenticeship?", Office of Work-Based Learning, U.S. Department of Labor, Washington, DC, 1992.
65. Carole E. Copple, et. al. SCANS in The Schools. Pelavin Associates, Inc., Washington, DC, 1992, vii.
66. Interim Report: Advisory Panel for the Dictionary of Occupational Titles. U.S. Department of Labor, Washington, DC, 1992, i.

BIBLIOGRAPHY

America's Choice: High Skills or Low Wages!, National Center on Education and the

Economy, Rochester, NY, 1990.

Apprenticeship Training: Administration, Use, and Equal Opportunity. General Accounting

Office, Washington, DC, 1992.

"Apprenticeship", Occupational Outlook Quarterly, Winter 1991/92.

Carnevale, Anthony P., Leila J. Gainer, Eric R. Schulz. Training the Technical Work

Force. (San Francisco: Jossey-Bass, 1990).

Carnevale, Anthony P., Leila J. Gainer, Janice Villet. Training in America. (San Francisco:

Jossey-Bass, 1991).

Census of Service Industries (1987). U.S. Department of Commerce, Washington, DC,

1989.

Copple, Carole E., et. al. SCANS in The Schools. Pelavin Associates, Inc., Washington,

DC, 1992.

Digest of Education Statistics - 1992. U.S. Department of Education, Washington, DC,

1992.

Fisher, Marc. "German Job Training: A Model for America?", The Washington Post,

October 18, 1992.

Gibbons, John H. Worker Training: Competing in the New International Economy. Office

of Technology Assessment, Washington, DC, 1990.

How Workers Get Their Training, U.S. Department of Labor, Washington, DC, 1985.

BIBLIOGRAPHY

"Industry Report - 1992", Training, October, 1992.

Interim Report: Advisory Panel for the Dictionary of Occupational Titles. U.S. Department of Labor, Washington, DC, 1992.

Kazis, Richard. Education and Training in the United States: Developing the Human Resources We Need for Technological Advance and Competitiveness. (Cambridge: The MIT Press, 1989).

Lee, John B. and James P. Merisotis. Proprietary Schools: Programs, Policies, Prospects. ASHE-ERIC Higher Education Report 5, George Washington University, Washington, DC, 1990

Lusterman, Seymour and Leonard Lund. Innovation and Change in Voc-Tech Education. The Conference Board, New York, 1991.

"News Release", Career College Association, Washington, DC, 1992.

Porter, Michael E. The Competitive Advantage of Nations. (New York: The Free Press, 1990).

A Profile of the National Labor Market and Implications for American Education. The Career Training Foundation, Washington, DC, 1992.

Thomas, R. Murray. International Comparative Education: Practices, Issues and Prospects. (Oxford: Pergammon Press, 1990).

Thurow, Lester. Head to Head. (New York: William Murrow & Co., Inc., 1992).

Vocational Education in the United States: 1969-1990. U.S. Department of Education, Washington, DC, 1992.

BIBLIOGRAPHY

Work-Based Training: Training America's Workers. U.S. Department of Labor,
Washington, DC, 1990.

Workforce 2000: Executive Summary. The Hudson Institute, Indianapolis, IN, 1987.

1987 Census of Service Industries-United States. U.S. Department of Commerce,
Washington, DC, 1989.

"What is Youth Apprenticeship?", Office of Work-Based Learning, U.S. Department of
Labor, Washington, DC, 1992.